REMARKS

Claims 1-27 are pending in the application. Claims 1, 6-8, 10, 15-17, 19 and 24-26 stand rejected as anticipated by U.S. Patent 5,185,764 to Baier ("Baier"). Claims 2-3, 11-12 and 20-21 stand rejected as obvious in view of Baier and U.S. Patent Publication No. 2002/0021750 to Belotserkovsky ("Belotserkovsky). Claims 4-5, 13-14 and 22-23 stand rejected as obvious in view of Baier and U.S. Patent Publication No. 2003/0091111 to Vaananen ("Vaananen"). Finally, claims 9, 18 and 27 stand rejected as allowable, but dependent upon a rejected base claim. The applicant respectfully traverses the rejection of claims 1-8, 10-17 and 19-26, and requests reconsideration of these claims for the reasons noted below.

Claims 1-9, 10-18 and 19-27 respectively claim methods, computer program products and receivers for determining the parameters of a *continuous* communication channel tap model, including calculating one or more sets of adaptively updated channel taps, and "fitting the one or more sets of adaptively updated channel taps to update the parameters of the *continuous* channel tap model." The Examiner argues that Baier discloses "fitting" the parameters of the continuous communication channel tap model via means 29 and 31 of Fig. 2, as discussed in column 4, lines 58-66 and column 5, lines 36-41. *Office Action* at p. 3. The applicant respectfully disagrees.

As with the Wang reference discussed in the previous Office Action, the Examiner confuses the iterative or adaptive channel tap algorithm disclosed in the Baier reference (which finds a discrete number of channel tap vectors that are adaptively updated over some period of time), with the *continuous* channel tap vector model that is claimed in the instant application (which fits a plurality of such discretely updated channel tap vectors to determine the parameters of a continuous channel tap vector model). The discrete nature of Baier's iterative channel tap vector algorithm is evident in Fig. 4, which shows a plurality of Baier's estimated or adaptively updated channel tap vectors as a function of time, where each vector is represented by a small cross or circle.[1] See, Baier at col. 6, ll. 7-9. Baier noticeably fails to disclose, or to even suggest, fitting these discrete and adaptively updated channel tap vectors to find or update the parameters

[1] As Baier himself notes, Fig. 4 is only a diagrammatic representation of Baier's channel tap vector, which is actually "composed of k individual parameters." Baier at col. 6, ll. 9-11.

of a continuous channel tap vector model, which is what the applicant has disclosed and claimed in the instant application.

For example, unlike Baier, the applicant discloses an adaptive equalizer that can "continually track the time-dependence of the channel taps used to recover data transmitted through a communications channel." *Application* at 7. This is done by first "obtain[ing] sets of iteratively updated channel taps using the LMS algorithm," (such as the sets disclosed in Fig. 4 of Baier), and then "fit[ting] these sets of updated channel taps to a time-dependent channel tap model to determine the parameters of the channel tap model." *Id.* As a result, the channel tap vector is modeled as a continuous function of time, $h(t)$, as shown on page 8, Eq. (3) (where t is continuous time), rather than as a discrete function of time, $h(k)$, as shown on page 5, Eq (1) (where k is the discrete symbol or sampling time). Because Baier fails to disclose or to even suggest "fitting the one or more sets of adaptively updated channel taps to update the parameters of the *continuous* channel tap model" as discussed above, Baier fails to anticipate claims 1, 6-8, 10, 15-17, 19 and 24-26 as suggested by the Examiner.

Claims 2-3, 11-12 and 20-21 stand rejected as obvious in view of Baier and Belotserkovsky. The Examiner relies on Baier to teach "all the subject matters claimed [in claims 1, 10 and 19] except for obtaining a first set of channel taps from an input data stream containing a training data stream and a locally generated copy of the training data stream, and initializing the parameters of the channel tap model with the first set of channel taps." *Office Action* at 4. The Examiner relies on Belotserkovsky to teach these limitations. Notably, the Examiner does not rely on Belotserkovsky to teach or suggest "fitting the one or more sets of adaptively updated channel taps to update the parameters of the continuous channel tap model" as recited in claims 2-3, 11-12 and 20-21. Nor can he, as Belotserkovsky teaches a conventional adaptive channel tap algorithm that is "configured to generate an initial equalizer tap setting based on a training symbol . . . and to generate subsequent tap settings based on data symbols and an adaptive algorithm." *Belotserkovsky* at ¶ 23. In other words, like Baier, Belotserkovsky teaches generating a plurality of discrete channel tap settings rather than generating a continuous channel tap model by fitting such discrete channel tap settings as recited in claims 2-3, 11-12 and

20-21. Consequently, claims 2-3, 11-12 and 20-21 are patentable over the combination of Baier and Belotserkovsky for at least this reason.

Claims 4-5, 13-14 and 22-23 stand rejected as obvious in view of Baier and Vaananen. The Examiner relies on Baier to teach "all the subject matter claimed [in claims 1, 10 and 19], except for fitting the one or more sets of adaptively updated channel taps to a channel tap model that is linear in time." *Office Action* at 4. The Examiner relies on Vaananen to teach "fitting the one or more sets of adaptively updated channel taps to a channel tap model that is linear in time" in ¶¶ 20 and 52, which disclose a linear equalizer. The applicant respectfully disagrees.

A linear equalizer is a device that is used to recover a data symbol $x(k)$ transmitted at time k, from a stream of data symbols $y(j)$ received at previous times j = k-1, k-2, k-3 . . . 0, by linearly weighing the data symbols $y(j)$ with weights from a tap weight vector h_k, i.e., by computing the linear sum: $x(k) = \sum h_j y(j) = h_0 y(0) + h_1 y(1) + \ldots + h_k y(k)$. The tap weight vector h_k corrects for channel distortion, and can be constant in time or can vary in time. In the latter case, each of the individual tap weights h_k in the tap weight vector will be a function of time (i.e., $h_k(t)$), which may or may not be a linear function of time. For example, as shown in on page 8, Eq. (3), the tap weights can be a linear function of time, e.g., $h_k(t) = a_k \cdot t + h_k(0)$. Alternatively, the tap weights can be a quadratic function of time, e.g., $h_k(t) = b_k \cdot t^2 + a_k \cdot t + h_k(0)$. In either case, the equalizer that uses the tap weights remains a *linear* equalizer since it recovers the transmitted symbol $x(k)$ as a *linear* sum of the previously received symbols $y(j)$ as shown above. Thus, Vaananen's disclosure of a linear equalizer in ¶¶ 20 and 52 fails to disclose or to even suggest parameterizing an equalizer's tap weights with a channel tap model that is linear in time, i.e., with tap weights $h_k(t) = a_k \cdot t + h_k(0)$, let alone "fitting . . . one or more sets of adaptively updated channel taps to update the parameters of [a] <u>continuous</u> channel tap model" that is linear in time as recited in claims 4-5, 13-14 and 22-23. Consequently, claims 4-5, 13-14 and 22-23 are patentable over the combination of Baier and Vaananen for at least this reason.

All claims are believed to be in condition for allowance, which action is kindly requested. No fees are believed due, however, please apply any applicable charges or credits to deposit account 06-1050.

Respectfully submitted,

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John F. Horvath
Reg. No. 47,663

Fish & Richardson P.C.
P.O. Box 1022
Minneapolis, MN 55440-1022
Telephone: (302) 652-5070
Facsimile: (302) 652-0607

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